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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,329	03/28/2001	Akio Enomoto	791_142	4236

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EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 03/27/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/819,329

Applicant(s)

ENOMOTO ET AL.

Examiner

Jonathan S. Crepeau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The copending applications listed on the Information Disclosure Statements filed on June 11 and June 25, 2001 (paper nos. 2 and 4) have been updated to reflect their status as issued U.S. patents. The information in these patents has been considered.

### ***Drawings***

2. Figures 10 and 11 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. Claims 9 and 13 are objected to because of the following informalities: in claim 9, the limitations "the elastic body" and "the metal foil" in line 10 appear to lack antecedent basis. In claim 13, the limitation "the fluoride resin" also appears to lack antecedent basis. Appropriate correction is suggested.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 9-16, 21, 23, 25, and 27 are rejected under 35 U.S.C. 102(a) as being anticipated by EP 1059681 (Nemoto et al). Regarding claim 9, the reference is directed to a lithium secondary battery comprising a wound internal electrode body and a nonaqueous electrolytic solution (see abstract). The battery further contains a cylindrical case (72) having both ends open which is sealed by electrode caps (71) containing pressure release holes (85) (see Fig. 2). Pressure release valves comprising a spacer (64), metal foil (86), and an elastomer (87) are disposed in the inner peripheries of the holes (see Fig. 11; paragraphs 49 and 53). Regarding claim 10, the metal foil is formed so as to have a surface pressure of not less than 980 kPa (see paragraph 56). Regarding claim 11, the spacer is formed of a metal material having a Young's modulus of not less than 170 GPa (see paragraph 49). Regarding claim 12, the spacer is a ring member having a stopper structure so that a stress not less than a constant amount will not be applied to the elastomer (see paragraph 64). Regarding claim 13, the metal foil is made of Al, Cu, Ni, or alloys containing them and is coated by fluoride resin (see paragraph 40). Regarding claim 14, the stress applied to the elastomer is not less than 980 kPa and not more than the force amount to cause the elastomer to maintain elasticity maintenance percentage of not less than 95% (see paragraph 53). Regarding claims 15 and 16, the elastomer is packing processed to a

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required dimension and is made of ethylene-propylene rubber (see page 11, lines 36-40).

Regarding claim 21, the battery has a capacity of not less than 2 Ah (see paragraph 19).

Regarding claims 23, 25, and 27, the battery may be used in an electric vehicle or hybrid electric vehicle (see paragraph 19).

Thus, the instant claims are anticipated.

6. Claims 9-16, 21, 23, 25, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Nemoto et al (U.S. Patent 6,468,692). This reference is considered to be an equivalent of EP 1059681 and therefore anticipates claims 9-16, 21, 23, 25, and 27 for the reasons stated above.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4, 6, 7, 18-20, 22, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 895297 (Nemoto et al).

Regarding claims 1 and 19, JP 10-162801 teaches a lithium secondary battery comprising an electrode body wound on a hollow winding core (13; see abstract, Figure 1). The battery comprises a cylindrical battery case having both ends open (see Figure 6), and electrode caps (2, 3) having internal and external terminals (see Fig. 1). Regarding claims 1 and 3, the electrode caps have center hollow portions (4) functioning as pressure release holes in a position corresponding with the center axis of the winding core (see Fig. 1, paragraph 14 of the machine translation). Regarding claim 2, the center axis of the winding core overlaps the center axis of the battery case (see Fig. 1). Regarding claims 4 and 7, the area of the hollow portion of the winding core and the area of the pressure release hole are identical (see Fig. 1). Regarding claim 19, the electrode caps are formed in approximately rotary symmetry around the center axis of the battery case (see Fig. 1).

JP '801 does not expressly teach that the battery is a lithium secondary battery, as recited in claims 1 and 19. The reference further does not teach that the battery has a capacity of at least 2 Ah, that the area of the pressure release hole is larger than  $0.3 \text{ cm}^2$  (claims 4 and 20), or that the ratio of the area to the capacity is larger than  $0.02 \text{ cm}^2/\text{Ah}$  (claim 6). The reference further does not teach that the pressure release hole is used as the electrolyte solution inlet (claim 18), or that the battery is used in electric vehicles (claims 22, 24, and 26).

EP '297 teaches a lithium secondary battery in the abstract. The battery preferably has a capacity of 5Ah, as disclosed in paragraph 27. The battery further comprises pressure release mechanisms having areas of larger than  $0.1 \text{ cm}^2$ , whereby the ratio of the area to the capacity is in the range of  $0.05\text{-}2.0 \text{ cm}^2/\text{Ah}$  (see paragraphs 76 and 83). The battery is used in electric vehicles and hybrid electric vehicles (see paragraph 101).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of EP '297 to use a large capacity lithium secondary battery as the battery of JP '801. In paragraph 2, EP '297 teaches that lithium secondary batteries have "large energy densit[ies]" and are an "effective means for using electric power by storing the electric power in the night. Thus, it is eagerly desired to put a large capacity lithium secondary battery, which is suitable for these uses, into early practical use." Accordingly, the artisan would be motivated to use a large capacity lithium secondary battery as the battery of JP '801.

Further, the artisan would be motivated by the disclosure of EP '297 to use valves in the battery of JP '801 having areas larger than  $0.1 \text{ cm}^2$ . In paragraph 83, EP '297 teaches that "it is preferable to make the opening area of the pressure release mechanism  $0.1 \text{ cm}^2$  or more in order to definitely operate the opposite pressure release mechanisms and to secure the safety by making the difference in the operation pressure of the opposite pressure release mechanisms preferably not larger than  $8 \text{ kg/cm}^2$ ." Accordingly, this would provide motivation for the artisan to use valves in the battery of JP '801 having areas larger than  $0.1 \text{ cm}^2$ . Further, the artisan would be motivated by the disclosure of EP '297 to use capacity and area values such that the ratio of the area to the capacity is in the range of  $0.05\text{-}2.0 \text{ cm}^2/\text{Ah}$ . In paragraph 77, EP '297

teaches that when this value is below 0.05, “the pressure release is not sufficiently carried out and accidents such as burst or firing of a battery is caused.” Similarly, in paragraph 78, the reference teaches that when the value is larger than 2, “there is a fear that a part of the internal electrode body or components of the battery would jump out from the opening portion, or when a part of the internal electrode body jumps out in the state of a short circuit, inflammable materials around the battery would be fired or burned.” Accordingly, this would motivate the artisan to use capacities and areas in the battery of JP ‘801 such that the ratio of the area to the capacity is in the range of 0.05-2.0 cm<sup>2</sup>/Ah.

Regarding claims 22, 24, and 26, these claims recite the use of the battery in an electric vehicle or hybrid electric vehicle. Although EP ‘297 discloses the use of its battery in such a vehicle, these claims do not have to be accorded patentable weight since they recite an intended use. See MPEP §2114. Claim 18, which recites the intended use of the pressure release hole as an electrolyte inlet, also does not have to be accorded patentable weight for this reason.

9. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 895297 as applied to claims 1-4, 6, 7, 18, 22, 24, and 26 above, and further in view of Teramoto (U.S. Patent 5,571,632).

JP ‘801 does not expressly teach that the winding core has a thickness of at least 0.8 mm (claim 5), or that the winding core is made of aluminum (claim 8).



The patent of Teramoto is directed to a lithium battery. In column 3, line 38, the reference teaches an inner tube (i.e., winding core) (11) having a thickness of 2 mm. In column 4, line 13, the reference teaches that the inner tube is made of aluminum.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the inner tube of Teramoto as the winding core of JP '801. In column 5, line 57, Teramoto teaches that by using the inner tube, "it is possible to easily affect the sealing by, for example, the pipe expander. [...] In addition, it is possible to obtain a high sealability or hermetic property." Accordingly, this would provide sufficient motivation for the artisan to use the inner tube of Teramoto as the winding core of JP '801.

10. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1059681.

The reference is applied for the reasons stated above. Regarding claim 28, in paragraph 59, the reference teaches a method of making the battery comprising the steps of preparing a plate member with a hole, placing the foil and elastic body (87) in the hole, and placing a stopper (washer 64) in the hole to complete the valve.

The reference does not expressly teach the exact order of the method steps recited in claim 28, i.e., that the metal foil and elastic body are first combined with the spacer to form a pressure release hole unit, and then the unit is fit into the plate member.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because it has been held that selection of any order of

performing process steps is *prima facie* obvious in the absence of new or unexpected results.

See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946); MPEP §2144.04(IV)(C).

Accordingly, the method recited in claim 28 is an obvious variation of the method disclosed by the EP '681 reference.

11. Claims 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 1059681.

Regarding claim 9, JP 10-162801 teaches a lithium secondary battery comprising an electrode body wound on a hollow winding core (13; see abstract, Figure 1). The battery comprises a cylindrical battery case having both ends open and sealed by electrode caps (2, 3) (see Figs. 1 and 6). Regarding claims 9 and 17, the electrode caps have center hollow portions (4) functioning as pressure release holes in a position corresponding with the center axis of the winding core (see Fig. 1, paragraph 14 of the machine translation).

JP '801 does not expressly teach that the battery is a lithium secondary battery, or that the pressure release valves comprise an elastic body, metal foil, and spacer, as recited in claim 9.

As set forth above, EP '681 teaches a lithium secondary battery comprising a pressure release valve comprising a spacer (64), metal foil (86), and an elastomer (87).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of EP '681 to use a lithium secondary battery as the battery of JP '801. In paragraph

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2, EP '681 teaches that lithium secondary batteries are "high in energy density" and are "expected as an equipment for night storage of electricity, for effective use of electricity."

Accordingly, the artisan would be motivated to use a lithium secondary battery as the battery of JP '801.

Furthermore, the artisan would be motivated to use the valve structure of EP '681 as the valve of JP '801. In paragraph 11, EP '681 teaches that "a pressure-releasing valve of simple structure has been fitted by a simple method while the reliability is retained." Accordingly, this would provide motivation for the artisan to use the valve structure of EP '681 in the battery of JP '801.

### ***Double Patenting***

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 9-16, 21, 23, 25, and 27 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No.

6,468,692 (Nemoto et al). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '692 patent anticipate the instant claims. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993).

14. Claims 1-3, 18, 19, 22, 24, and 26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-53 of copending Application No. 09/863,108 (U.S. Pre-Grant Publication No. 2001/0049054). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '108 application anticipate the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the

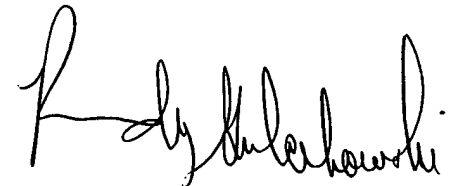
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organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-5408 or (703) 305-5433.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

March 20, 2003

A handwritten signature in black ink, appearing to read "Randy Gulakowski". The signature is fluid and cursive, with a large initial "R" and a long, sweeping underline.

RANDY GULAKOWSKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700